REMARKS

Changes to specification

The specification has been amended to remove references to specific claim numbers, to remove ambiguity as claims are amended. These changes do not add any new matter – as they merely incorporate language from the original claims – and are not in response to any rejection.

Objection to claim 4

The Examiner asserts that "titanium" is misspelled in claim 4. Applicant would be happy to correct any such misspelling; however, the undersigned has printed out a copy of the claims from the online filewrapper and is not finding the problem pointed to by the Examiner. This is very puzzling. Is the Examiner perhaps looking at some version of the claims other than what is in the online filewrapper? Perhaps the Examiner is looking at some kind of blurred scan or printout? Reconsideration is respectfully requested. In any case, the version of the claims above has the correct spelling.

Rejections under section 112

Claim 2 has been amended to replace the term "substantially comparable" with -- comparable indices of thermal expansion.

Claim 3 has been amended to delete the language objected to by the Examiner.

New claims 8-10 have been added to correspond to some material deleted from claim 3.

Applicant has also amended claim 4 to delete "preferably," for stylistic reasons. Applicants respectfully submit that the change does not alter the scope of the claim.

REMARKS

Miscellaneous

Claim 5 has been amended to delete "halogen lamp." The "halogen lamp" limitation has been moved to new claim 20.

Art rejections

The art rejections are respectfully traversed.

Since the references are complex, Applicant will confine his remarks to those portions of the references cited by the Examiner, except as otherwise indicated. Applicant makes no representation as to the contents of other portions of the reference.

Any of the Examiner's rejections and/or points of argument that are not addressed below would appear to be moot in view of the following. Nevertheless, Applicant reserves the right to respond to those rejections and arguments and to advance additional arguments at a later date. No arguments are waived and none of the Examiner's statements are conceded.

Claim 1

The rejection of claim 1 is respectfully traversed. Dynys specifically states that the layer cited by the Examiner is for reducing "extrinsic" stress, per col. 2, line 39. Dynys goes on to explicitly exclude thermal stress from the particular definition of "extrinsic" stress used by that patent, per col. 3, ll.38 *et seq*.

The Examiner has gone to an outside document for definitions of "extrinsic" and "intrinsic" stresses, rather than using the definitions offered by Dynys itself. Certainly, different authors may define terminology differently; however, when interpreting Dynys it is only appropriate to use the definitions that Dynys gives. The patentee is entitled to be his own

lexicographer. Applicants respectfully contend that it is not appropriate to go to an outside document for a definition of "intrinsic" or "extrinsic" stress here where the reference gives its own definition.

Claim 1 relates to thermal and/or intrinsic stress. Applicants accordingly respectfully submit that claim 1 distinguishes patentably over the reference.

New claim 19 has been added reciting only thermal stress. Applicants respectfully submit that this claim is even more clearly patentable than claim 1 with respect to the Dynys reference. Dynys admits that its protective layer made of titania increases thermal stress per col. 4, lines 25-30. By contrast, the protective layer of the preferred embodiment reduces thermal stress.

Claim 2

This claim recites that the materials in the protective layer, the layer, and the bulb have comparable indices of thermal expansion.

Applicant respectfully submits that this is not the case in the reference, where the lamp is quartz, the interference filter comprises silica and tantala, and the layer pointed to by the Examiner as protective includes titania.

New claims 11, 12, 18

New claim 11 has been added depending from claim 2, and reciting "the same chemical compositions" for the protective and layers with lower refractive index. This distinguishes even more clearly over the reference, where the protective layer is a different material from the rest of

the interference filter. This structure has the functional advantage that it is easier to manufacture an interference filter using two materials rather than three materials.

New claim 12 similarly recites that the protective layer is the first material, like the layers with lower index of refraction.

New claim 18 further recites that the bulb is also of the first material, further distinguishing over the reference which may actually use 4 different materials, and, therefore, be more expensive to manufacture.

New claims 9, 10, and 13

These claims have been added to recite zirconium oxide (ZrO_2) or zirconia more explicitly. Applicant respectfully submits that this material is not taught or suggested in the reference. This material is particularly advantageous because does not have phase transitions in the range of operation temperatures in the present application from room temperature (RT) to 1000°C. Titania and tantala do have phase transitions in this temperature range.

A remark about coefficients of thermal expansion for different materials:

Silica has a very low thermal expansion coefficient of about $0.5x10^{-6}K^{-1}$.

Tantala have about $3x10^{-6}K^{-1}$.

Titania and zirconia have about $8x10^{-6}K^{-1}$.

The values are temperature dependent and depend on the detailed deposition method. It can be seen, though, that tantala deviate less from silica in thermal expansion and so the layers can survive cycling from RT to the operating temperature in most applications. But the higher mismatch from silica to titania and zirconia means that in applications with very high operation temperatures the layer stacks cannot withstand thermal cycling.

This difference in the material systems means that Dynys has a different problem from that addressed in the present application and takes a different measure to solve it. Therefore applying Dynys' solution of adding titania to zirconia layers as disclosed in the present application would even increase problem because now phase transitions could also happen and add extrinsic stress to the layers.

Claim 13 also recites the high intensity discharge lamp, which have higher temperatures and therefore more need the zirconia.

Claims 16 and 17

These claims recite that the protective layer can be an intermediate layer, which is also not taught or suggested by the reference.

Please charge any fees other than the issue fee to deposit account 12-1470. Please credit any overpayments to the same account.

REMARKS

Applicant respectfully submits that he has addressed each issue raised by the Examiner — except for any that were skipped as moot — and that the application is accordingly in condition for allowance. Allowance is therefore respectfully requested.

Respectfully submitted,

By /Anne E. Barschall/
Anne E. Barschall, Reg. No. 31,089
Tel. no. 914-332-1019
Fax no. 914-332-7719
Date of printing: May 16, 2008

In house contact at assignee:
Christopher Ries
Reg. No. 45,799
Tel. # 914-945-6000